OCD and Cognitive Control: Electrophysiological and Behavioral Markers of Regulative and Evaluative Control
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\section*{INTRODUCTION}
Cognitive control separates functionally and temporally into regulative and evaluative processes.
Regulative control may include maintaining context (rules/instructions) to guide decisions, while evaluative control could involve monitoring performance while completing a task.
The neural bases of regulative and evaluative control are in the pre-frontal cortex (DLPFC) and anterior cingulate (ACC) respectively.
The detection of processing conflicts between congruent and incongruent stimuli involves a reliable event-related potential (ERP) known as the N450 (located in the frontal-central region and ACC).
The conflict SP is involved in conflict detection and resolution (central-parietal region). The cue-related slow wave component identifies goal compatible action (extrastriate cortex and left DLPFC).

As various cognitive performance deficits are found in OCD patients, we used the before mentioned ERPs to dissociate regulative and evaluative cognitive control processes using a modified cued-Stroop task.

\section*{PARTICIPANTS}
OCD: N=25 \hspace{0.5cm} Control: N=26

\section*{METHODS}
Modified Cued-Stroop Test: 6 blocks of 70 trials each

\begin{itemize}
  \item ITI (\_ms)
  \item Instruction Cue
  \item Color
  \item Word
  \item ERP Reduction
  \begin{itemize}
    \item 
    \item N450: 400-530ms after stim.
    \item Conflict SP: 600-750ms
    \item CSW: 800-1000ms
    \item Frontal-central electrode sites
  \end{itemize}
  \item EEG Acquisition
  \begin{itemize}
    \item 128 channel sensor net
    \item 10-100Hz bandpass filter
    \item Average re-referenced
    \item 250Hz sampling rate
    \item Impedance \leq 50 k\Omega
  \end{itemize}
\end{itemize}

\section*{EEG RESULTS}
Group x Cue ANOVA not significant for the CSW ($p = .067$)

\begin{itemize}
  \item Congruency x Cue ANOVA failed to reach significance for the N450 ($p = .666$) and Conflict SP ($p = .782$)
\end{itemize}

\section*{CONCLUSION}
Electrophysiological indices of conflict detection (N450) and regulative processes (Conflict SP) do not vary between OCD and control in this sample.
Behaviorally, there was a significant Cue x Congruency x Severity interactions for error rates ($p = .02$). However, the low number of participants with severe OCD in this sample (n=2) is insufficient to draw meaningful conclusions.
Results are largely congruent with previous cognitive control research using a modified cued-Stroop task.
Results also suggest that participants with OCD do not experience cognitive control disruption relative to controls in this sample.

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